

## ABSTRACT OF THE DISCLOSURE

Apparatus and methods for noninvasively measuring blood density and hematocrit in a human subject can include an appliance for applying pressure around a segment of a subject's limb or appendage that includes a pressure sensing means and  
5 encloses an array of impedance sensing devices applied to the subject's skin for independent fluid volume measurements. While applying pressure to the limb segment by the pressure appliance, measurements of blood pressure, blood pulse wave velocity, and limb segment impedance are recorded. The measurements are subsequently processed to yield changes of arterial blood volume during pulse wave passage. Then pressure, wave  
10 velocity, and derived volume data are combined to yield the density of the blood. Blood density is converted to hematocrit by means of a linear relationship between the two. Independent of the blood hematocrit, such apparatus and means may also be used to measure the density of enclosed fluid in other pulsed flow non-rigid wall vessel systems.

15